



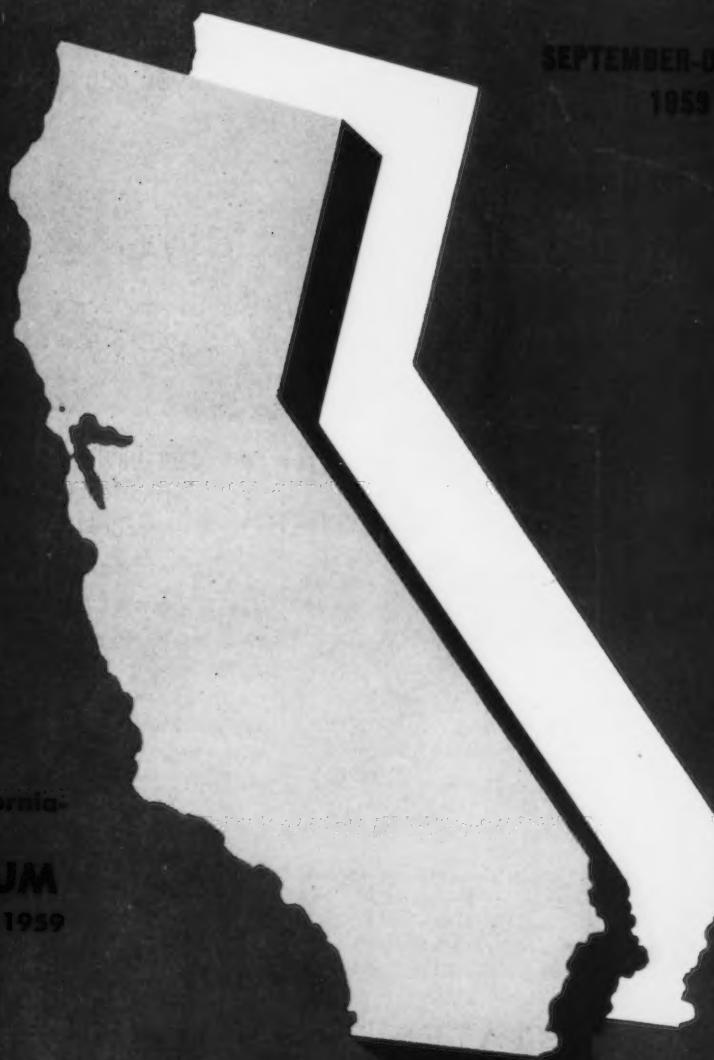
# THE CALIFORNIA VETERINARIAN

SEPTEMBER-OCTOBER  
1959

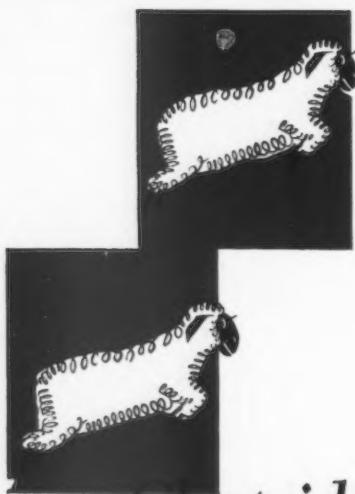
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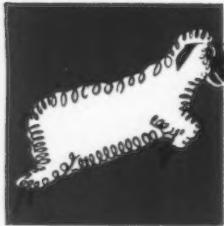


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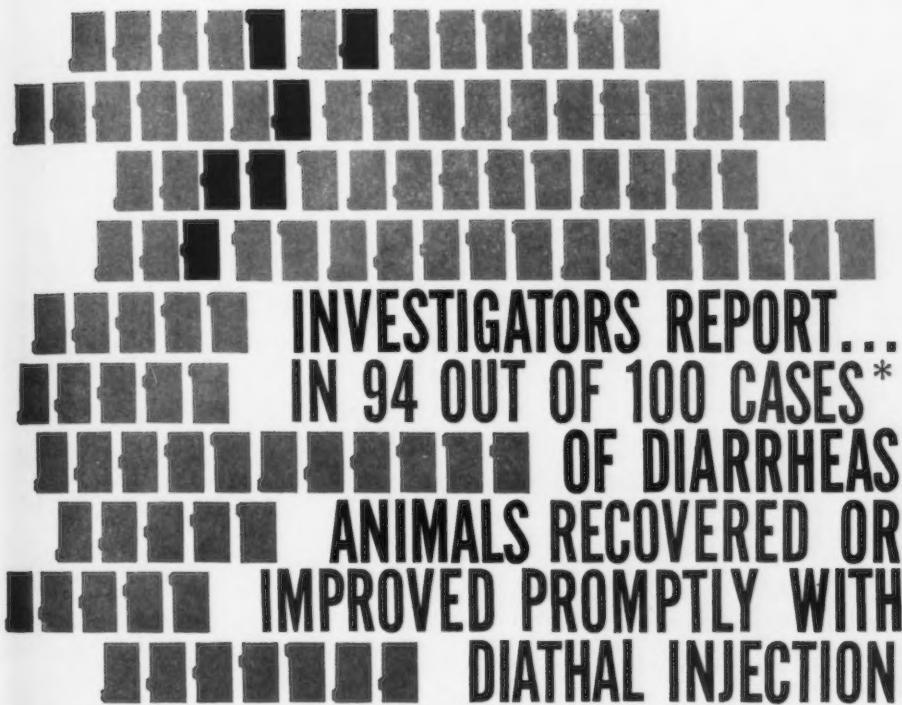
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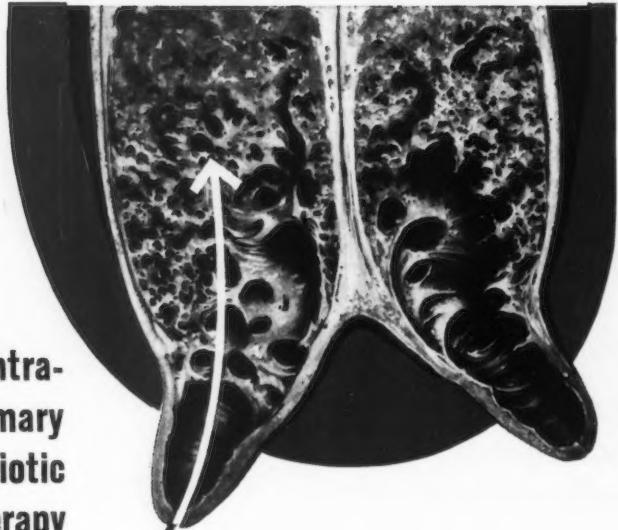
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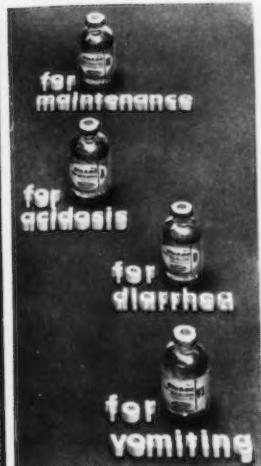
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# THE CALIFORNIA VETERINARIAN

SEPTEMBER-OCTOBER, 1959

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## Number 1

# Effect of a New Active Hepatic Principle in the Treatment Of Chronic Interstitial Nephritis and Toxemia in Dogs

TOM D. HARRIS, D.V.M., Practitioner, San Mateo

## Introduction

Chronic interstitial nephritis (C.I.N.) and generalized toxemia have, in the experience of the author, and some of his colleagues, presented a perpetual problem in the maintenance of geriatric dogs. The lack of particularly successful therapy in the treatment of these conditions has been quite apparent. Recently, a preparation of an active factor obtained from bovine liver<sup>1</sup> and consisting of a protein-like substance has been investigated in canine poly-arthritis and equine lameness. In addition, preliminary laboratory trials of this preparation indicating improvement of liver function, kidney function and the lowering of blood ammonia after heavy exercise stimulated the consideration of a clinical study of this preparation in C.I.N. dogs.



TOM D. HARRIS

this preparation indicating improvement of liver function, kidney function and the lowering of blood ammonia after heavy exercise stimulated the consideration of a clinical study of this preparation in C.I.N. dogs.

## Procedure

Sixteen dogs of varying ages with chronic interstitial nephritis (the majority of these were older animals in the age group 12-14 years), ten dogs with generalized toxemia and ten post-surgical toxicemic dogs were studied. These animals were all treated with intravenous injections (5 ml per individual injection), of the preparation under study and the results compared with control animals consisting of 275 dogs treated over the past two years with symptoms of toxemia or diagnosed as demonstrating some degree of chronic interstitial nephritis.

Standard procedure for treating C.I.N. dogs in our practice has consisted of infusing fluids with required electrolytes, antibiotics and Vitamin B Complex, prescription diets, and, where warranted, whole blood. This procedure was continued in evaluating the new preparation in order to effect a fair comparison of the treated animals, not only with the control animals, but with all dogs treated for the past eight years in our hospital.

<sup>1</sup>Acutalyn for these studies supplied through the courtesy of Enzyme Products, Inc., of Palo Alto, California.

The dogs were evaluated in terms of:

1. Incidence of death.
2. Time for recovery.
3. Clinical improvement which included condition of: (a) Sclera; (b) Mucosa; (c) Mouth odor; (d) Hair coat; (e) Ability to eat, drink water, take active interest in surroundings and resume normal activity.

In five animals, selected at random, blood urea nitrogen, (B.U.N.), and albumin excretion were measured by Uremilab or LaMotte blood urea test kits prior to treatment and again before release from the hospital.

## Results

The effects of the hepatic principle on dogs with toxemia and nephritis are presented in Table I. After a single injection, 60 per cent of the animals with generalized toxemia showed signs of recovery within 24-48 hours. Only 13 per cent of the control animals had improved during this interval. Incidence of death in the experimental and control groups was the same.

The rate of improvement of treated animals post-surgery was indistinguishable from the untreated dogs. Although the series was too small for definite conclusions, the incidence of death in the experimental dogs was almost one-half that observed in the comparable control group (20 and 36 per cent respectively).

The effect of the hepatic factor in C.I.N. dogs was particularly pronounced. Improvement was rapid, 62 per cent of the animals demonstrating improvement 12-24 hours after injection. Only 4 per cent of the control animals improved during this short period. Although 13 per cent of the control animals died, only one of the treated dogs expired (6.2 per cent). This dog was in an extreme terminal state and by the time treatment was instigated, was dehydrated, had foul uremic breath and bloody stools. The animal died quickly within the first day, possibly before therapy had a chance to take effect.

Recovery usually followed a single injection. In all, ten cases recovered with one injection, four cases required two injections and one case required four daily injections.

(Table II.) In the five treated C.I.N. dogs, the B.U.N. dropped from high down to normal or almost normal levels. Similarly, the albumin in urine also decreased.

In comparison with the controls, the treated animals have been notable in their lack of relapse. Experiences in this hospital have indicated that the relapse of geriatric nephritis cases has been frequent. No side effects or

sensitizations were observed on any of the cases.

### Discussion

A new active hepatic principle has, for the first time, made it possible to treat toxemic and C.I.N. dogs with a fair degree of confidence that improvement will occur, and that relapse will not follow in the immediate future.

In most cases of toxemia, which include the toxemia associated with chronic interstitial nephritis, the responsible etiological agents are unknown. Therefore, it is impossible at present to explain the mechanism of action of the hepatic principle. In one subject reported in Table I, the dog had advanced to the point of jaundice which in our experience is a very grave sign. However, using the preparation, the case cited was reversible and within 48 hours the jaundice had cleared and complete clinical recovery was obtained very shortly thereafter. It would be interesting to investigate canine cases of hepatitis.

It has been suggested that most cases of nephritis are related to leptospirosis. While it might be possible that the older dogs have at

some time suffered from an acute infection of leptospirosis, it is the opinion of the investigator that none of the cases under study had an inactive or sub-clinical infection. Because of the possibility of active leptospirosis being involved in cases of kidney disease in younger dogs, it would be interesting to determine whether clinical improvement with this preparation would be equally as effective without concurrent antibacterial therapy.

### Summary

The effect of a new active hepatic principle from bovine liver was studied in toxemia in dogs. In a series of 36 dogs with chronic interstitial nephritis or generalized toxemia, a notable improvement was obtained as reflected by decreased time of recovery and a decrease of incidence of death. A decrease in blood urea nitrogen and urinary excretion of albumin was associated with improvement in the C.I.N. dogs. During the period of the use of the preparation in our hospital, mortality rate from chronic interstitial nephritis has dropped an approximate 50 per cent. No side effects or sensitizations were observed in any of the cases.

TABLE NO. I

Condition	No. of Cases	RECOVERY TIME			Deaths
		12-24 Hrs.	24-48 Hrs.	Over 48 Hrs.	
General Toxemia (treated)*	10	2	6	1	1
General Toxemia (control)†	75	7	10	50	8
Post Surgical Toxemia (treated)*	10	1	1	6	2
Post Surgical Toxemia (control)†	25	2	4	10	9
C.I.N. (treated)*	16	10	4	1	1
C.I.N. (control)†	175	7	20	125	23

(Includes euthanasia cases diagnosed as C.I.N.)

\*Subjects received Acutalyn, Vitamin B, fluids, low protein diet, antibiotics and some whole blood.

†Subjects received Vitamin B, fluids, low protein diet, antibiotics and some whole blood.

TABLE NO. II

The effect of a hepatic principle in the treatment of C.I.N. in five dogs

Animal No.	B.U.N.		Albumin in Urine	
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
	mg/100 cc	mg/100 cc		
1	50	15	+++	+
2	35	10	++	0
3	75	25	++++	+
4	65	25	++++	trace
5	75	35	++++	+

## Comparative Safety and Effectiveness Of Volatile Anesthetics\*

GEORGE T. EDDS, D.V.M., PhD.,  
*Vice-President, Fort Dodge Laboratories, Inc.*

The use of volatile anesthetics has progressed from the empirical use of ether in 1842 to a sound scientific basis established on extensive experimentation and observations.

At the outset anesthesia was in danger of repudiation by all in the medical fields because of its haphazard and irrational techniques. With the recent introduction of Halothane it is important that proper understanding of the use of

volatile anesthetics again be reviewed to prevent misuse of this "precision" agent. The comparative properties of the more popular volatile anesthetics may be summarized:



GEORGE T. EDDS

Most veterinarians have used one of the ultra-short acting barbiturates as a preanesthetic narcotic, primarily to facilitate introduction of the endotracheal tube and its attachment to the anesthetic equipment.

In a recent report on the use of Halothane in a series of 142 trials on dogs, Lumb reports that Halothane produced good anesthesia with adequate muscular relaxation for major abdominal and thoracic surgery; nausea and vomiting were not observed in any of the animals, with rapid recovery from anesthesia not attended by struggling. An induction concentration in the inspired air of 2-4% followed by a maintenance level of 0.5-1.0% assures best results. Others, working with Halothane as an anesthetic agent, report that overdosage with the agent may cause temporary apnea. Heart action continues for several minutes which enables the operator to switch the patient from anesthetic gas to air or oxygen, with a resuscitator such as provided by the National Gas Cylinder unit or administration of artificial respiration with prompt return of res-

CHART I—COMPARISON OF VOLATILE ANESTHETICS

	Halsan	Ether	Chloroform	Trichlorethylene
Physical State . . . . .	Liquid	Liquid	Liquid	Liquid
Inflammable . . . . .	No	Yes	No	No
Explosive . . . . .	No	Yes	No	No
Administration . . . . .	Open or Closed	Open or Closed	Open or Closed	Open or Semi-Closed
Potency* . . . . .	4-6	1	2-4	2-4
Induction . . . . .	Smooth	Excitement	Smooth	Smooth
	Rapid	Slow	Rapid	Rapid
Planes of Anesthesia . . . . .	All	All	All	Light only
Muscle Relaxation . . . . .	Good	Good	Good	Poor
Irritation . . . . .	No	Yes	Yes	No
Laryngeal Spasm . . . . .	No	Yes	Yes	No
Capillary Oozing . . . . .	No	Yes	Yes	No
Elimination . . . . .	Rapid	Slow	Slow	Rapid
Recovery . . . . .	Smooth	Nausea	Nausea	Nausea
Post-Anesthesia Shock . . . . .	No	Vomiting	Vomiting	Vomiting
Liver Damage . . . . .	No	No	Yes	No
			Yes	Yes

\*Where activity of ether is considered as 1.

Halothane is a clear, colorless, non-irritant, volatile, nonflammable, non-explosive liquid. Chemically, it is 2-bromo-2-chloro-1:1:1-trifluoroethane ( $CF_3CHClBr$ ) with a boiling point of  $50.2^{\circ}C$ , and specific gravity of 1.86. Since some decomposition may occur when exposed to light, the liquid is stabilized by the addition of 0.01% Thymol and storage in amber bottles.

\*Presented at the CVMA Convention, Santa Monica, June 21-23, 1959.

piratory action. Again, the slight lowering of blood pressure which accompanies Halothane anesthesia on animals has not been a handicap but instead has served to reduce hemorrhage at the surgical site.

Veterinary usage in England for performing Caesarian operations in bitches has resulted in a greater number of puppies being born alive. This has been explained as the result of the very rapid excretion of this volatile.

(Continued on page 36)

## Spontaneous Chronic Equine Laminitis\*

JOHN W. BRITTON, D.V.M., Practitioner, Oakdale

Chronic laminitis as a sequel to the acute form of the disease has received major attention in textbooks of veterinary surgery and the pathological hoof alterations have been detailed with great accuracy. However, the spontaneously occurring chronic form has been dismissed as an independent disease of unknown or obscure etiology. Actually the disease is much more frequent than is commonly supposed. In the author's practice spontaneous chronic laminitis ranks with wire cuts and colic as a major disease problem. It has been readily recognized by ranchers in the area and given the common name of clover founder. It is the purpose of this paper to record observations based on a clinical study of over 1000 cases and during the past ten years.

Even a casual study of these case reports reveals several rather interesting and important common factors which indicate that in fact laminitis is but one symptom of a more general disease with obesity, sluggishness, mental changes, rough hair coat and sterility as constant accompanying symptoms. Closer study revealed that these pathological changes bear a marked resemblance to those observed in spontaneous myxedema or adult hypothyroidism as seen in the dog and human. The laminitis is the most spectacular symptom of the disease to the layman and probably is limited to the hypothyroid horse because the unyielding hoof wall allows no room for expansion in the vascular dilation of the digits. This study is based on the premise that chronic laminitis is in reality only an advanced symptom of the more general disease—hypothyroidism.

There is a rather definite seasonal incidence of spontaneous chronic laminitis. The vast majority of the cases are observed during the months of January to June. Based on the assumption that this disease is simply a form of spontaneous myxedema, the seasonal variation can be explained on the corresponding seasonal fluctuation of thyroid activity. According to Dukes, the iodine content of the thyroid is nearly three times as great between June and November as between December and May. The iodine decrease is relative because of thyroid enlargement during winter months plus the increased secretion to maintain body temperature. Hence a borderline hypothyroid individual would be under greater thyroid stress in winter and tend to show symptoms of chronic laminitis.

The overwhelming majority of the cases are seen among horses on irrigated Ladino clover pastures, however some do develop on young rapidly growing native grass pastures in the

spring. It is possible that there is a goiterogenic factor present in Ladino clover such as is found in cabbage, raw soybean, turnips, etc.

As in human spontaneous myxedema there is a very definite individual and sex linked predisposition. In man it is said to be seven times as frequent in women as in men. (Bell) Certainly in horses it is much more common and important as a disease of mares. Geldings respond more readily to therapy and apparently develop the symptoms much more slowly. In addition, chronic laminitis is rarely recorded among so called high strung (hyperthyroid) breeds such as Thoroughbreds, Standardbreds and Saddlebreds. The type of horse referred to by horsemen as an easy keeper that stays fat on limited feed is the type among which chronic laminitis is most frequently observed. These horses are of a hypothyroid type—gentle, fat, indolent, inactive, overfed and underworked. Ponies and burros are undoubtedly the most susceptible. Age is also a factor since chronic laminitis is rarely observed in horses under 7 years of age, and is most frequently noted in middle age.

In summary spontaneous chronic laminitis or, in a broader definition, spontaneous equine myxedema is a disease of middle age mares of a hypothyroid type and disposition occurring primarily on Ladino clover pastures during the winter and spring. It is characterized by pathological obesity, roughened hair coat, cutaneous thickening, laminitis, cardiac hypertrophy, mental changes and sterility.

Symptomatically, pathological obesity, in the form of hard edematous deposits of fat laid down over the hips, withers and neck is uniformly observed. This is probably the initial symptom noted. Both the tone and deposition of this fat is distinctly different from that seen in over fed normal horses. Mares develop an exaggerated crest which gives them the appearance of stallions. This crest is hard as a rock. Accompanying the obesity is a dry rough rapidly growing hair coat, lack of muscle tone and a distinct cutaneous thickening of an edematous nature. Many of these cases never shed their hair from year to year. Occasionally alopecia is a prominent symptom.

Laminitis is present in about half the cases presented for examination. The elongated hoof, ringed walls, high contracted heels, atrophic frog and hard brittle texture of the entire foot are characteristic. Usually all four feet are involved although the front feet are most seriously damaged. When the diseased sole is trimmed, reddish brown or yellow areas of oozing blood and serum are encountered in the thickened sole. Frequently one uncovers areas of septic pododermatitis with typical grey black pus in these areas. In extreme cases pain is so severe in all four feet that habit-

\*Presented at the CVMA Convention, Santa Monica, June 21-23, 1959.

ual recumbency is the rule. In the average case, the owner notices that the horse is becoming stiff, lies down more than normal and moves hesitantly. In about 35 per cent of the cases no pain is evidenced on pressure with hoof testers and rheumatic or articular involvement is apparent. In general none of the pathological hoof alterations in spontaneous chronic laminitis are nearly as severe or marked as are those observed in chronic laminitis following an acute attack. True dropped sole is never encountered in the form under consideration. Instead thickened sole is the rule.

As in human myxedema, mental changes are usually present, often dramatically so. Extreme oppressiveness amounting to masculinization is often observed. Normally tractable mares become vicious and tend to bite, kick and become "stubby" around other horses and men. Some will break down fences and attack other horses or even, in extreme cases, mount other mares in heat. Several mares, originally presented for oophorectomy because of irritability, switch tail and almost constant estrus and other symptoms of nymphomania have been diagnosed as hypothyroidism. A few weeks of thyroid therapy completely reverses these abnormal behaviors. In many cases on the other hand, complete lethargy and indolence are predominant mental changes. The response of these horses to thyroid is equally dramatic.

Most affected mares are sterile or at least show impaired fertility. Genital hypoplasia is evident and the entire reproductive tract appears inactive and in a quiescent state of anestrus. These mares rarely show a true heat and if bred may conceive only to suffer early abortion or failure of implantation at 45-60 days. Their attitude to the teaser is one of either cold indifference or exaggerated aggressiveness regardless of the stage of estrus. The difference in behavior of these mares is probably due to basic thyroid inter-relation with other endocrine glands. The old question among breeders as to whether a mare is sterile because she is fat or fat because she is sterile may actually be resolved by answering that she is in fact both fat and sterile because she has spontaneous myxedema. Perfectly normal mares on a really fattening diet become quite obese without any impairment of fertility. However hypothyroid mares become obese on even scant feed and still are sterile.

Other symptoms observed include almost uniform cardiac hypertrophy and dilatation. Probably there is also a venous dilatation and congestion which in the feet is responsible for the laminitis. A few mares show extreme congestion and enlargement of the udder and may even secrete milk, indicating an estrogen imbalance. These horses often show weakness and are easily fatigued as evidence of the heart involvement. Occasionally one will drop dead from heart failure.

Basic therapy in all cases involved replacement of the thyroid deficiency. In a few instances where the value of the horse warranted its use, prepared thyroid extract was administered in doses up to 10 grains daily. In the majority of cases however, commercial preparations or iodinated casein—so called thyroprotein were used. Response to these preparations was quite varied because of the differences in degree of deficiency. Without basal metabolism tests it is difficult to determine the replacement therapy needed, hence an average dosage has been established. Depending on the reaction to this dosage, increase or decrease is indicated. This dosage for a 1000 pound horse is 3 heaping tablespoonfuls daily mixed with the grain for two weeks. If within a week some improvement in weight loss and mental outlook is not apparent an increased dosage is in order. Symptoms of toxicity include, rapid breathing, tremors, excessive weight loss and heart palpitations. These symptoms appear as a rule in three to four days after therapy is initiated. Any of these symptoms dictate an immediate withdrawal of the drug for several days and then resumption at a lower dose rate. Two fatalities occurred at this level of treatment before dosage could be regulated. In general however, this level is probably on the low order, and one should not hesitate to increase it when no appreciable improvement is noted within a week. Supportive therapy includes removal of the horse from pasture and feeding a limited amount of hay plus daily exercise. When chronic laminitis is established, thorough hoof trimming is indicated. All the dead sole should be removed down to fresh blood. Often this is neglected and when the areas of seepage are reached the farrier will quit. These should all be removed down to normal healthy foot. Usually a stimulating blister around the coronary band followed by daily painting with a hoof dressing is indicated. For several days the horse may appear even lamer but one will find that on forced exercise, most of this will disappear.

Under favorable conditions and optimum dosages improvement is very rapid and return to normalcy can be expected within 3 to 4 weeks. Regulation of diet and exercise and keeping the susceptible horse off of clover or young grass pasture will usually suffice to prevent a recurrence. Many severely affected horses have been symptom free on this program for periods up to 5 years.

In summary clinical observation of chronic spontaneous equine laminitis strongly suggests that this disease is in reality only a terminal symptom of equine hypothyroidism. The disease is undoubtedly much more common than heretofore realized and includes such symptoms as pathological obesity, dry skin lesions, sterility, mental changes and cardiac dilatation.

## Plans Made for S. F. Meeting

The initial planning meeting for the June 1960 convention was held Sunday, September 6, at the home of R. L. Collinson, chairman. An entire new format will be used for the San Francisco meeting. Those present were Drs. C. J. Ferreira, Redding, Chairman, Large Animal Committee; A. J. Eisenhower, Merced; R. S. Dickson, Bakersfield; Ralph Vierheller, Whittier, Chairman, Small Animal Committee; Wm. Stansbury, Antioch; Warren Walker, La Crescenta; C. E. Brown, Hayward, Northern California Coordinator; J. Bradley Crundwell, Burbank, Southern California Coordinator, and Kenneth Humphreys, Executive Secretary, CVMA.

Following a month's survey it was decided to formulate a semi-symposium type program. Further, instead of some 30 speakers, only approximately 12 men will appear on the program. These individuals will all be specialists in their fields and will bring a high quality of informative material to those attending. Confirmation has already been received from a portion of those invited to participate.

It is planned to begin the meeting with a number of "work-shops" on Monday morning. These will be so timed that the lecturer or demonstrator will repeat the same subject material several times, which will allow registrants an opportunity to visit a number of the practical demonstrations. These "workshops" will be available at no extra charge. They will be especially planned to tie in with the lectures to follow.

The committees are most anxious to present a program which will be of high caliber and will give everyone an opportunity to carry home really practical information which can be put to work in an every-day practice.

Dr. Collinson states that information regarding the program and plans for it will be forthcoming from time to time prior to the meeting.

### Gen. Young, VC Chief, Retires

Brig. Gen. Elmer W. Young, VC, retired as Chief of the Army Veterinary Corps on August 31. The General recently received the First Oak Leaf Cluster to the Legion of Merit at a retirement party in his honor at the Army Surgeon General's Office, Washington, D. C.

General Young, Chief of the Veterinary Corps since August, 1954, has been in the Army Medical Service for 34 years. Upon retiring, he plans to live in Arlington, Virginia.

Dr. W. F. Irwin, AVMA Executive Board member and secretary of the Oklahoma VMA, was killed in a hunting accident September 10th in Alaska.

Dr. Irwin's influence on organized veterinary medicine marks a chapter of professional cooperation at the local, state and national level that will not be erased.

## Health Certificate for Dogs and Cats

Dr. H. G. Wixom, Chief, Bureau of Livestock Disease Control, Division of Animal Industry, has advised that a new health certificate to be used for interstate shipment of dogs and cats has been prepared.

At the present time these certificates are available in small lots, and he requests that practicing veterinarians order only a few pads at one time until the supply becomes established.

It is understood that this certificate is to be used for interstate shipment of dogs and cats only. The Agricultural Research Service office at Sacramento has informed Dr. Wixom's office, however, that it also may be used for shipment of small animals to foreign countries.

In ordering health certificates, veterinarians must be accredited by the State and United States Departments of Agriculture and have a license in California to practice veterinary medicine.

When orders are sent to the Bureau shown above, at 1220 N Street, Sacramento 14, they should show whether D.A.I. Form 10 (Revised), or D.A.I. Form 43 is requested. Unless this specific information is received, it will be necessary to withhold shipment.

In many cases veterinarians engaged in small animal practice only will have no further use of the D.A.I. Form 10 (Revised). Dr. Wixom would appreciate having them returned at the time D.A.I. Form 43s are requested. Large animal practitioners should retain Form 10 for use in shipments of large animals only, and request Form 43 for small animals.

The Bureau feels that this new form will be an added service to the veterinarians of California. It has been requested by many and should be the answer to their problem of using a simplified health certificate for dogs and cats.

### Schering Releases New Film on Tranquilizer

A new film demonstrating the dramatic effects on cattle of Trilafon, a tranquilizer marketed by Schering Corporation, has been released for a showing to professional and farm groups, it was announced by Dr. J. C. Siegrist, veterinary research director of the Bloomfield, N. J., pharmaceutical firm.

The 16 mm. color and sound production runs for 15 minutes and deals primarily with the problems inherent in shipping cattle to feedlots and getting the stock on feed promptly.

Available for local showing, film inquiries should be directed to: Audio-Visual Department, Schering Corporation, Bloomfield, N. J. At least five weeks advance notice should be given for proper scheduling.

## ON THE DISTAFF SIDE — Lady veterinarians talk it over.



For the first time at any CVMA convention, four women veterinarians met in Santa Monica in June and discussed the program.

Pictured above, left to right, are Dr. Kerry J. M. Willetts, West Los Angeles; Dr. Marilyn J. Twitchell, Santa Monica; Dr. Jean C. Immenschuh, El Cajon, and Dr. Maxine M. Benjamin, Fort Collins, Colo.

Dr. Benjamin was one of the speakers at the 71st annual meeting. She spoke on "Simple Guides for Practical Application of Fluids and

Electrolyte Therapy" and "New Tests and Equipment Suitable for Veterinary Hospitals." She also appeared on the well-attended Question and Answer luncheon panel.

Dr. Benjamin has been on the faculty at Colorado State University for the past 11 years as associate professor of pathology, teaching clinical pathology and supervising the clinical laboratory.

Doctors Willetts, Twitchell and Immenschuh are California practitioners.

## AVMA Important to California

California has over 400 more members in the AVMA than any other state. We are most fortunate in that we belong to Region 10 and have elected a member to the Executive Board for the past two terms. Our representative to the House of Delegates has the maximum voting power provided for in the House of Delegates (seven votes, which is the same as Illinois, New York and Ohio). At the last AVMA meeting held in Kansas City, over 80 Californians were present. However, I wonder if the veterinarians in California have really accepted their responsibilities in the AVMA? How many men do we have on the important committees of the AVMA? How many of our local associations have discussed AVMA business that transpires at the House of Delegates? How many times have we instructed our representatives to the House of Delegates and our member of the Executive Board on important items that affect veterinary medicine?

If California is going to keep the lead as the outstanding state in veterinary medicine, we must accept our responsibilities in the AVMA.

It is most important that our members discuss the various problems that come before the House of Delegates and instruct our representatives of the thinking in California. It is also important that more California men serve on the various committees that help formulate the future of veterinary medicine.

It is the responsibility of all the members of the CVMA to see that good men are nominated for the various committees and offices of the AVMA. Perhaps this should be done at our Midwinter meeting so that our member of the Executive Board may present these names in the March meeting of this important group.

KENNETH HUMPHREYS  
Executive Secretary

# Some General and Clinical Aspects of Immunology\*

RODERICK L. SNOW, D.V.M., Practitioner, Reseda

## Immunity

Since this discussion centers about immunity and related subjects, it might be a good plan to start off by attempting a definition of immunity.

Immunity is only a relative term; there is little in the way of absolute immunity. A high degree of immunity is usually simply increased resistance. A low degree of resistance constitutes susceptibility.

According to Topley and Wilson,<sup>1</sup> the term immunity is a satisfactory one if it is made clear that we are using it to denote the resultant between two opposing systems, i.e., the host system and the parasite system, and that this resultant may lie anywhere in the range between complete susceptibility and complete immunity.

Immunity may be subdivided into two chief categories: innate and acquired.<sup>1</sup> Innate immunity is inherent in an animal and is not due to the presence of antibodies; it includes species, racial and individual immunity. Acquired immunity may be active or passive. The active type results from infection or artificial methods. Passive immunity of course may be artificially induced, as with antisera, or may occur naturally as in the placental or colostral transfer of antibodies.

## Bacterial Infection

Multiplication of pathogenic bacteria is generally extracellular in host tissues. Reproduction and metabolism are supported by favorable conditions in the tissues of the host for which they have affinity. Injury to host tissues in bacterial infection is caused by toxins, enzymes and aggressins elaborated by the parasites. Infecting bacteria seldom cause mechanical damage.<sup>1,3</sup>

## Virus Infection

Viruses are obligate intracellular parasites, and do not multiply extracellularly. Reproduction is supported by the energy system and materials supplied or obtained by the host cell. Damage to host tissues is principally through alteration of metabolism of host cells in the process. Unlike bacteria, viruses seldom produce toxins, although there are instances in which certain viruses are known to have this ability.<sup>1,2,3</sup>

## Immunity in Bacterial and Virus Diseases

Immunity in bacterial disease is usually relative and not lifelong. In many virus diseases the immunity is absolute and permanent.<sup>3</sup> In the light of current concepts, immunization is effected in essentially the same way in the two classes of diseases; namely through specific antibody production in re-

sponse to antigenic stimulus, whether vaccination or infection. Infecting virus particles are invulnerable to circulating antibodies once they have achieved the intracellular position. Antibodies in both bacterial and virus infections are derived from the same globulin fraction of the blood serum and the essential quality of immunity is the same whether stimulated by live or killed bacterial or viral antigens. As will be related later, it would appear that a factor (or factors) in addition to antibodies is necessary for immunity in virus infections.<sup>4</sup>

## Therapy in Bacterial and Virus Diseases

Generally speaking, therapeutic control of bacterial infections is easier than in virus infections. Viruses are inaccessible to antisera in the intracellular position, and only a few of the larger viruses are to any degree susceptible to antibiotics or sulfonamides. The course of virus disease beyond the viremic stage is unaffected by even high titers of circulating antibodies.<sup>2</sup>

## Experimental Approach to the Therapy of Virus Diseases

Virus particles are composed of outer coats or shells of protein, and inner cores of deoxyribonucleic acid, generally designated as DNA, and which is the so-called chromosomal material. When invading a susceptible host cell, the protein coat of the infecting particle attaches to receptors on the host cell surface, and the DNA portion enters the cell, leaving the protein coat on the outside surface of the cell. Within the cell interior, the viral DNA proliferates, diverting the host cell energy system and materials in the process. Newly reproduced infective particles are eventually released from the cell, each particle complete with a new protein outer coat. In the process, the host cell has been damaged or destroyed.<sup>2</sup>

Theoretically, virus multiplications could be interfered with at several stages in this proliferative cycle.<sup>2</sup> One method might be neutralization or destruction of the virus at the extracellular position by the administration of antisera, and by administration of antibiotics in cases of those viruses known to be susceptible to them, since presumably the antibiotic effect is exerted extracellularly.

In the interference phenomenon, or cell blockade, the presence of one virus in a cell precludes the presence of another. The implication has been advanced that an attenuated virus lacks the ability to penetrate deeply into the cell,<sup>5</sup> while a fully virulent one pervades the cell throughout and inflicts greater damage. If the attenuated virus invades the cell first, a second virus, regardless of virulence,

(Continued on page 34)

\*Presented (condensed herewith) at the CVMA Convention, Santa Monica, June 21-23, 1959.

# Tranquilizers in Large Animals\*

AUSTIN TAYLOR, *Jensen-Salsbury Laboratories, Inc.*

Today's veterinary tranquilizers can essentially be divided into four classifications. Number 1, the propanediols of which Mebromamate is a good example. Number 2, the diphenalmethanes, of which Hydroxazine is an example. Number 3, the Rauwolfia alkaloids, which to date have not found much application in the veterinary field. Finally, number 4, the phenothiazine derivatives, of which Chlorpromazine is the prototype.

Of these four classes only the phenothiazine derivatives so far have enjoyed wide popularity. This is because of their high potency and relative lack of side effects. Four examples of this class were chosen for our clinical evaluation.

1. Chlorpromazine was used as a basis for comparison.
2. Mepazine, trade name—Paxital.
3. Perphenazine, trade name—Trilafon.
4. Isobutrazine, trade name—DiQuel.

Of the diphenalmethane derivatives, Hydroxazine or Atarax, was the only one included in this report because of its relatively low toxicity and its wide promotion to the profession. Since the Rauwolfia alkaloids and the Meprobamate (Miltown) type have found little use in the veterinary field none of these compounds were included.

As one might expect, the molecular structure of all of these phenothiazine compounds is quite similar. They have almost identical nuclei as far as the molecule is concerned and they vary only slightly in the structure of their side chains. But this slight variation in side chains is responsible for their variation in clinical effect and pharmacological activity.

In order to understand the significance of any laboratory data I think it is essential that we have a complete understanding of what the techniques were that were used to determine these benefits. However, due to time limitations, we are going to restrict our discussion to results and we will not go into a discussion of techniques employed.

We are simply going to list some of these pharmacological activities that were considered in our evaluation:

1. Potentiation of ether anesthesia.
2. Potentiation of morphine analgesia.
3. Hypothermic activity.
4. Effect on response to abnormal situations and environments.
5. Effect upon motility.
6. Effect on conditioned response.
7. Antiemetic activity.

In addition to these effects upon the CNS we have:

1. Antihistaminic activity.

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2. Antispasmodic activity.
3. Acute toxicity.

These tests were all selected because each represents a specific type of clinical activity and because the results were fairly easy to quantitate.

I think we should note here that all of these tests were performed on a milligram per milligram comparison basis, therefore the variations in clinical dosages do not therefore affect the results but certainly they should be considered before you try to apply these results to clinical use.

## 1. Potentiation of Ether Anesthesia.

This is a direct measure of the decrease in CNS activity from a given compound. Our results indicate that these tranquilizers vary from very little depression with Hydroxazine to that of Isobutrazine which shows 120% of the activity obtained from Chlorpromazine, the comparison compound.

## 2. Potentiation of Analgesia.

Preanesthesia is one of the principal uses of tranquilizers certainly in a small animal practice, therefore, it is important to determine the degree to which these compounds possess presurgical analgesic activity or the degree to which other common analgesics will be potentiated. Our tests showed that none of the compounds examined showed a greater activity in this respect than does Chlorpromazine.

## 3. Hypothermic Activity.

An increase in activity, such as is seen in many animals requiring tranquilization, is often accompanied by an increase in body temperature. On the other hand, the increase in temperature may be directly responsible for the increase in activity. In either case, hypothermic activity contributes to the tranquilizing activity of the compound in question. Again, we found this activity to vary from zero reduction with Mepazine to a 5-degree reduction for Chlorpromazine.

## 4. Response to Abnormal Situations and Environments.

By means of a laboratory technique called the "traction test" it is possible to demonstrate both a decreased awareness of an abnormal situation and an inability to respond to stimulus. The tranquilizers varied by this criterion from the potent activity of Isobutrazine which has an LD<sub>50</sub> of 5 mg/kg to complete inactivity for mepazine.

## 5. Effect upon Motility.

Another laboratory method is a test for spontaneous activity and is also essentially a measure of CNS depression. Again we found

a wide variation with Isobutrazine, Chlorpromazine and Perphenazine possessing a potent activity of approximately the same magnitude while Mepazine and Hydroxazine are inactive.

#### 6. Effect upon Conditioned Response.

The fear responses, commonly seen in an animal such as running, kicking, biting, are essentially conditioned reflexes whether they be of a hereditary nature or from previous experience in training. Suppression of these conditioned reflexes is the principal indication for the routine use of tranquilizing drugs in veterinary medicine. It was found that in this respect Isobutrazine, Chlorpromazine and Perphenazine are again approximately equivalent while Mepazine and Hydroxazine are somewhat less potent. Again it should be pointed out as a reminder that these comparisons were made *not on a clinical dosage basis, but on a mg/mg of the drug basis*.

#### 7. Antiemetic Activity.

Vomition is a clinical indication for which the tranquilizers are frequently prescribed. Yet, variation in antiemetic potency is greater perhaps than in any other circumstance. We found Perphenazine to be definitely superior with an activity 7 times that of Chlorpromazine.

#### 8. Antihistaminic Activity.

Since the Phenothiazine derivatives were originally synthesized as antihistamines, it is interesting to compare them in this respect. Also important is the recent use of tranquilizers in the treatment of certain allergic skin conditions wherein the antihistaminic property may well be the essential activity we are seeking. Both Isobutrazine and Hydroxazine are potent antihistaminic drugs, while Mepazine and Chlorpromazine exhibit but only slight activity.

#### 9. Antispasmodic Activity.

Another integral part of the activity expected from a tranquilizer is the quieting of the spasms of the GI tract. It usually accompanies anxiety and is evidenced by diarrhea in the animal. The compounds tested are all about equal in their ability to suppress these spasms, Isobutrazine and Mepazine being slightly more potent than were Hydroxazine and Chlorpromazine. In this test Perphenazine was not included.

#### 10. Acute Toxicity.

Catalepsy, although representing the ultimate in tranquility, is nevertheless an undesirable state for any pet or farm animal. Extremely high dosages of tranquilizers produce a cataleptic state in most species and it is essential that we know the comparative level at which this undesirable reaction may occur. This was determined for Isobutrazine, Chlorpromazine and Perphenazine only. The first two, Isobutrazine and Chlorpromazine,

demonstrate cataleptic activity at 36% and 50% respectively of the LD<sub>50</sub>. Perphenazine shows cataleptic activity at 0.25 mg/kg representing 0.23% of the LD<sub>50</sub> and approximating the clinical dose of this compound.

From this data, then, it is possible to select the proper tranquilizer for the specific use desired rather than expect all activities from a single drug. In some cases there are only minor shades of difference as far as potency is concerned.

To summarize, we have found and have presented data here which leads us to conclude that Isobutrazine, Chlorpromazine and Perphenazine are about equally potent in antispasmodic activity and in their ability to reduce the fear response and general motility. Isobutrazine is the product of choice when antihistaminic activity is desired and for the potentiation of general anesthesia. Perphenazine is the drug of choice in antiemetic therapy among the tranquilizers. The adrenolytic, catatonic potential of Perphenazine sometimes explains the occasional toxicity that we see with this compound. Chlorpromazine and Isobutrazine are the products of choice for the potentiation of analgesics and for hypothermia when indicated.

### Midwinter Conference, February 1, 2, 3

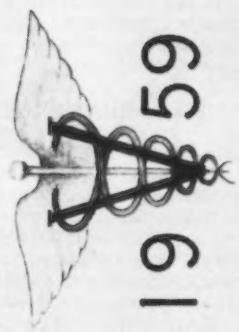
An outstanding Midwinter meeting program is rapidly materializing, according to Dr. Charles E. Cornelius, co-chairman. The meeting, February 1, 2 and 3, 1960, at Davis, will be highlighted by the appearance of Dr. James Archibald, internationally known surgeon and presently "Veterinarian of the Year"; General Wayne Kester, who will speak on large and small animal nutrition; and closed circuit television, sponsored by the Pitman-Moore Division of Allied Laboratories.

Dr. Cornelius further states that a number of outstanding speakers will augment those mentioned above. Among these are Dean Rue Jensen, Colorado State University; Dr. Mogens Simesen, Copenhagen; Dr. E. E. Stuart, Decatur, Alabama; Dr. G. R. Burch, Pitman-Moore Company, and Dr. Raymond Reed, University of Arizona.

Dr. Jensen will speak on Veterinary Medicine Education in Russia and Feedlot Diseases. Dr. Simesen will discuss and demonstrate Liver Biopsy of Cattle on TV. Dr. Stuart will cover Feed Additives and Integration in the Poultry Industry. Dr. Burch will make a presentation of Newer Developments in Veterinary Medicine, and Dr. Reed's discussion will involve Canine Coccidioidomycosis.

A number of fine papers and demonstrations will also be made by members of the faculty at the University of California, Davis, and by practitioners throughout the state.

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Biggs, Duane L.	Bjornson, Berend	Brennitt, Paul M.	Gebeloff, Dorrell G.	Lammons, Robert M.	O'Connor, Betty J.
Bisell, Glenn D.	Dahlen, Mervin E.	Collier, Donald G.	Green, Norman J.	Kondo, Victor F.	Nold, Morris R.
Boland, Stanley L.	Christensen, David A.	Coleman, Donald G.	Goodwin, Patrick B.	Maggs, Richard H.	Nissen, William R.
Alberts, Jack D.	Carroll, Eugene R.	Darley, Phillip T.	Gilliland, Charles W.	Hart, Ronald Q.	Morgan, Donald G.
Brown, Glenn E.	Duncan, Ronald F.	Fairfax, Lloyd A.	Herring, LaFay	Hunt, Ronald Q.	Moore, Corl E.
Baldwin, Thomas H.	Heberden, Arthur Q.	Hill, George N.	D. E. Meyer, Dean	Hutson, Donald E.	McGraw, Richard F.
Boileau, Stanley L.	Hawkins, Buster	Hornbeck, Lester	Hornig, Laffey	Hutton, George J.	Martin, William J.
Levine, Kenneth R.	Day, Wilson E.	Hort, Forrest K.	D. E. Meyer, Dean	Levine, Gabriele Z.	Miller, John R.
Levine, Kenneth R.	Hort, Forrest K.	Levine, Gabriele Z.	Hornig, Laffey	Miller, John R.	Miller, John R.

## AVMA House of Representatives Report

The 1959 business meeting of the American Veterinary Medical Association proved the worth of the seven reference committees, namely:

1. Committee on Reports of Officers.
2. Committee on Public Relations and Veterinary Service.
3. Committee on Veterinary Education and Research.
4. Committee on Internal Affairs.
5. Committee on Legislation.
6. Committee on Military Affairs and Civil Defense.
7. Committee on Miscellaneous Matters.

All business that had been prepared in advance was studied by one of the committees, and the committee recommendations were presented to the House of Delegates where they could be discussed fully by any delegate. Inasmuch as the committee recommendations were generally approved, one might suspect "railroad" tactics. The chairman pointed out clearly that open discussion by any delegate was in order. It appeared that some delegates did not understand this and suggested that such procedure might prevent open discussion of any proposal. If advance study of written reports had been completed any delegate could have discussed any item of business at the time the reference committee reported its recommendations. This method of procedure shortened the meetings considerably.

The AVMA is calling a special meeting in Chicago November 21 and 22 of all secretaries of constituent associations. They will give serious consideration to better liaison with the various constituent organizations which should result in improved function of both the constituent and national associations. Any matter pertaining to the secretaries' work will be considered and will include organization, office management, dues, committee functions, membership records, program, publications, legislation and other items.

The AVMA now has over 15,000 members with about 1,000 who have not paid this year's dues. A special effort is being made to attract those delinquent.

The Washington office has been very helpful in public relations with Congress and we are fortunate to have the service of General McCallum at that office. A summary of happenings in Washington is published in the Journal.

Two veterinarians have been added to the staff. One will serve as assistant editor of the Journal, and the other will devote his attention to the Research Journal.

The budget for the year just completed was nearly \$600,000. However it ended with a gain of about \$90,000.

The AVMA group insurance had a good year.

There are now about 3,800 veterinarians who receive this protection. A high percentage of the policy-holders are under 40 years of age, so the experience should be good in the immediate future.

The 1960 convention will be in Denver. Los Angeles has presented its invitation for the 1965 meeting. It will probably be decided at the 1960 meeting. New York was selected for the 1963 convention and the AVMA will give proper recognition to the fact that our national association was organized in New York City, June, 1863.

I was pleased to have Doctors Arburua, Pulling and Ozanian at the business sessions, as well as our executive secretary, Ken Humphreys. Dr. Pulling was elected as vice-president, as will be noted elsewhere in this issue. We were pleased to see Dr. L. M. Hurt, along with many others from California.

Our association should carefully consider possible nominations for the various offices and committees well in advance of the meeting so that the information can be given to our executive board member in advance of their March meeting.

If any member has any business to propose, please contact your executive board member and your delegate to the AVMA.

Our House of Delegates will meet for the first time at the Davis meeting. If your local association has not selected its delegate it is important that it be done at once and the executive secretary should be notified. Let us all put a shoulder to the wheel and make a better California Veterinary Medical Association.

Respectfully submitted,

CHARLES J. PARSHALL, D.V.M.

### Schering's Rahner Elected to Veterinary Exhibitors' Assn.

Charles W. Rahner, Jr., veterinary sales manager for Schering Corporation, was elected to a three-year term on the executive committee of the American Veterinary Exhibitors Association. The election took place at the annual meeting of the group during the American Veterinary Medical Association convention in Kansas City.

Rahner, head of the Bloomfield pharmaceutical manufacturer's veterinary sales operations since 1956, has been active in the exhibitors' ranks of the AVMA. He has been largely responsible for developing Schering's active participation in veterinary exhibitions at local and state levels, as well as at the national AVMA meeting. Schering's veterinary products are sold only to licensed veterinarians.

## Santa Monica Women's Auxiliary Meeting

Members of the Women's Auxiliary who attended the annual convention in June found that their hostesses from Santa Monica and environs had most graciously and hospitably provided a well-rounded social schedule for their enjoyment.

The turnout for the golf tournament, arranged by Mrs. Charles Weiner and Mrs. William W. Putney, was light, but the participants had fun and won trophies. On Sunday, June 21, auxiliary members joined their husbands for late afternoon cocktails. Monday morning registration, handled by Mrs. Reginald Stocking and Mrs. Phil Olson, was followed by a pre-business meeting coffee hour with Mrs. Olson in charge.

Highlighting the social program for auxiliary members, of course, was the annual luncheon meeting and fashion show, held this year in the Satellite Room of Santa Monica's Miramar Hotel and attended by approximately 100 women. Mrs. Harold Snow, chairman of the local arrangements committee, extended warm words of welcome, and Mrs. Reginald Stocking, State President, responded.

A unique feature of the program was that the entertainment was provided by talented veterinarians and their families. The Goodman trio, consisting of Dr. and Mrs. Goodman and their daughter, playing the violin, piano, and cello respectively, provided beautiful music before the fashion show. Dr. Philip Olson, an accomplished musician, played the piano accompaniment for the fashion show. Fashions were by Mickey Fine and Mildred Miller, co-ordinated by Nadine McNulty, but among the models were the lovely daughters of veterinarians, ranging from small fry to teen agers. Just before the installation of officers, Dr. Ben S. Burdo, accompanied on the piano by Mrs. Burdo, sang three selections, honoring his wife, the incoming president. These talented artists and their contributions to the entertainment were very much appreciated by the group.

The attractive decorations were the work of Mrs. Robert Schwarzmann, Mrs. Hans Grell and Mrs. Charles Weiner. During the luncheon, numbers were drawn at each table for the gorgeous centerpiece. Mrs. John Puckett and Mrs. Raymond Sprowl were responsible for the many details of the fashion show. Mrs. Murray Pollack arranged for the colorful programs, which carried out the aloha theme, and Mrs. Herbert Snow was in charge of the many intriguingly wrapped door prizes and favors.

New officers installed in an impressive ceremony by Dr. Donald Jasper of Davis were as follows: President, Mrs. Ben S. Burdo, Sebastopol; President-Elect, Mrs. Russell P. Cope, Richmond; First Vice-President, Publicity Chairman, Mrs. Donald Jasper, Davis;

Second Vice-President, Chairman of Loan and Scholarship Funds, Mrs. Louis Johnson, Sacramento; Membership Secretary, Mrs. William Putney, Van Nuys; Secretary, Mrs. Harold Snow, Los Angeles; Treasurer, Mrs. Ronald Hauge, Sacramento; Parliamentarian, Mrs. Herbert Ott, Norwalk.

Eight past presidents were honored at the luncheon and presented with gifts by the outgoing president, Mrs. Stocking. These included Mrs. E. V. Bacon, President in 1938-39; Mrs. Leslie Pike, 1946-47; Mrs. Marjorie Hatch, 1948-49; Mrs. G. N. Miller, 1949-50; Mrs. H. I. Ott, 1951-52; Mrs. Thomas Eville, 1954-55; Mrs. R. E. Duckworth, 1956-57; Mrs. Charles Ozanian, 1957-58.

Donations to the Student Loan Fund, from local auxiliaries, were announced as follows: Southern California, \$50; Alameda-Contra Costa, \$100; Sacramento Valley, \$50 plus a check for \$50 anonymously given, and San Diego, \$25.

A gift from the Auxiliary was presented by Mrs. Burdo to Mrs. Stocking in recognition of her fine leadership during the year 1958-59.

Mrs. Burdo announced the 1960 Nominating Committee to be Mrs. E. R. Braun, Hanford, Chairman; Mrs. H. F. Blanchard, San Jose; and Mrs. Philip Olson, Los Angeles. After brief, appropriate remarks by the new president, the meeting adjourned.

MRS. ELIZABETH A. JASPER  
Publicity Chairman

### Minutes of the Annual Business Meeting, Women's Auxiliary

The annual business meeting of the Women's Auxiliary to the California Veterinary Association was held at the Miramar Hotel in Santa Monica on Monday, June 22, 1959, at 11 a.m. Minutes of the midwinter meeting, held at the Sacramento Inn, Sacramento, were read by the secretary and approved. The treasurer, Mrs. Ronald T. Hauge, read the annual report, which showed a balance on hand on June 20, 1958, of \$827.42.

Mrs. E. R. Braun, First Vice-President and Chairman of Publicity, reported that she had sent out two News Letters to the membership and had written articles which were published in *THE CALIFORNIA VETERINARIAN* and the *AVMA WOMEN'S AUXILIARY NEWS*. She urged the members to send items of interest to the president so that the publicity chairman would have something to report in news letters and magazines.

Mrs. Ben S. Burdo, President-Elect, complimented Mrs. Harold Snow, Chairman of the local committee, and her staff for their efficient handling of the convention program.

Dr. R. L. Collinson of the CVMA told something of the plans for next year's meeting in San Francisco and passed out information re-

garding the new hotel, the Jack Tar.

Mrs. Russell P. Cope, Membership Secretary, reported 357 members paid to July 1, 1959; 79 members in arrears; total membership, 438.

Mrs. Percy Enge, of Davis, read Mrs. Donald Jasper's report on the meeting of the House of Representatives of the Women's Auxiliary to the AVMA, held at the Sheraton Hotel, Philadelphia, on August 12, 1958. California membership in the Auxiliary is second only to that of Illinois.

The following recommendations, adopted by the Executive Board at its meeting on June 21, 1959, were read by the Secretary and accepted and passed by the membership:

That Article IV, Section 3, of the Constitution shall read: "The term of office shall be for one year."

That Article IV, Section 1, of the By-Laws shall read: "The annual dues shall be two dollars a calendar year."

That Section 2 be added to Article V of the By-Laws, to read: "The Auxiliary shall grant a scholarship to a senior student in the School of Veterinary Medicine, University of California at Davis. Requirements for selection of student shall be based upon scholarship, leadership, character, and citizenship. The scholarship shall be administered by the second vice-president in accordance with regulations approved by the Executive Board and the membership. The award shall be granted at the Women's Auxiliary to the CVMA luncheon during the midwinter conference at Davis."

That the interest rate on student loans be increased, after the 24-months' period, by one

per cent each year to a maximum of six per cent.

That the Sacramento Valley Auxiliary be permitted to give the midwinter, 1960, luncheon and entertainment as their annual project.

Mrs. Burdo moved that the president appoint a committee of three to write a resolution of appreciation and purchase a gift for Mr. Charles Travers, retiring as secretary to the CVMA.

The president appointed the following committee to write the resolution and purchase the gift for Mr. Travers: Mrs. Philip Olson, Chairman; Mrs. Ben Burdo; Mrs. R. E. Duckworth.

Mrs. R. E. Duckworth made the motion that the following donations be given: Medical Research of California, \$5.00; AVMA Research Fund, \$15.00; AVMA Student Loan Fund, \$50.00.

Mrs. Louis Johnson, Second Vice-President, reported on the Loan and Scholarship Fund, the balance in the bank on June 20, 1959, being \$2,960.54, including \$365 in the Charles D. Stafford Emergency Memorial Loan Fund. Mrs. Johnson stated that we should be projecting our thinking into the future when she predicted that we should have \$10,000 in the fund in order to keep it operating. The report was placed on file.

EDNA G. JONES, Secretary

**As we go to press word has been received that the SCVMA Women's Auxiliary's annual benefit for Guide Dogs for the Blind will be a luncheon, October 20, 1959, in the Coconut Grove, Ambassador Hotel, Los Angeles. Reservations should be made to Mrs. Donald McDole, 1901 Manning Avenue, Los Angeles 25.**

## Why Join an Auxiliary?

MRS. CHARLOTTE OLSON

President, Southern California VMA Auxiliary

Our Auxiliary promises to reach a new high with membership this year and we are thrilled with the response.

As in the case of other professional auxiliaries, we do not have social bonds of equal financial background or identical aims or even the same living standard. Our only real common bond is that each of us is married to a veterinarian with the slight mutual interest that this implies.

We have many demands upon our time as women everywhere do—home, family, P.T.A., civic and political groups, and our own social associations. But as active, thinking, well-intentioned women we owe, and most of us are willing to give, some time to devote to our husbands' professional relationships, particularly in the interest of public understanding. This is a woman's province. We are proud of our husband's chosen profession; anxious that

he receive credit in the name of his profession for civic and philanthropic activities. We can't do this on an individual basis but we can on a group basis when we identify ourselves in the name of veterinary medicine, with recognized philanthropic activities.

The contribution of veterinary medicine to the health and welfare of our country is immeasurable in its universal inspection and safeguard of our nation's animal food products and its vigilant protection of all animals and pets. Veterinarians work with health departments everywhere in the prevention and control of diseases shared by animals and man. The practice of veterinary medicine implies the same devotion to animals that medicine implies to humanity which, at its finest, is round-the-clock care of its responsibilities.

With this brief background on the veterinary profession itself, what can we as an

## NEW DATES!

### Southern California - Las Vegas Symposium

October 25, 26, 27, 1959 — Desert Inn, Las Vegas, Nev.



A. G. MISENER



IRVING M. ROBERTS



RICHARD L. OTT

The Southern California VMA and the Las Vegas VMA have scheduled a three-day symposium to be held at the Desert Inn, Las Vegas, October 25, 26 and 27, 1959. This date is final! Due to unforeseen circumstances, the dates have been changed. These are the correct dates — October 25, 26 and 27.

A committee consisting of Dr. A. Mack Scott, Dr. N. L. McBride and Dr. Murray H. Phillipson has scheduled a complete program covering both large and small animal practice.

Four of the speakers are shown above: Dr. A. G. Misener, Chicago; Dr. Irving M. Roberts, Oakland; Dr. Richard L. Ott, Washington State College, and Dr. J. Kenneth Bone, Chicago. Others include: Dr. Allen Edmondson, Pasadena; Dr. William Gay, Woodstock, Ill., and a veterinarian from the Atomic Energy Commission.



J. KENNETH BONE

Interest in the program points to an expected attendance from many parts of the west coast, the western states and the middle western states.

A golf tournament will be held in conjunction with the meeting. The official Las Vegas VMA - SCVMA HACKERS will stage pre-tournament play on the afternoon of October 25. The tournament will be held starting at 9:30 A.M., Tuesday, October 27.

Two years ago these same groups held a golf tournament at Las Vegas and it was so successful that it was decided to repeat it this Fall—extending an invitation to non-golf-playing members to attend for an outstanding veterinary symposium.

Room reservations are necessary; those planning to attend should immediately write to Dr. A. Mack Scott, 3350 Atlantic Ave., Long Beach. Phone: GA. 7-2525.

auxiliary to the profession do to enhance its stature to the public and reward ourselves with a feeling of achievement?

Three years ago we, as the SCVMA Auxiliary, opened our eyes and found a place to invest our humanity, the *Guide Dogs for the Blind*, at San Rafael. This endeavor embraces our husbands' love of animals and our desire to devote our time to help in some measure the community in which we live.

In addition to this local project we subscribe with enthusiasm to the State Scholarship Fund. There is no limit to accomplishment

when accompanied by imagination, friendship, sympathy, and a goodly share of toil.

These, then, are our reasons for existence, the bonds that unite our heterogeneous group:

- (1) Our pride in our husbands' profession.
- (2) The real satisfaction of the worth of our chosen philanthropy.

We invite each wife to share in this satisfaction. For these are our primary aims. The delight of new friends, real fellowship and lasting pride in one another are only an added bonus.

## Henry Schacht Now on KGO

Henry Schacht, northern California's leading farm reporter, is now on Radio KGO, San Francisco, after 14 years on station KNBC.

As the Standard Farm Reporter, Schacht brings world wide and local news and special agricultural features of interest to veterinarians and ranchers alike.

During the past Schacht has interviewed veterinarians on his program and plans to continue doing so.

His broadcasts are as follows: 6:00-6:30 A.M., Standard Farm

Reporter: 6:35-7:00 A.M., California Calendar; and 12:15-12:30 P.M., the Noon Farm News. These are all heard Monday through Friday.



HENRY SCHACHT

## New Regulation on Calf Vaccination

The California Department of Agriculture has adopted, and Governor Edmund G. Brown has approved and proclaimed, a regulation which provides that on and after January 2, 1961, all female dairy cattle over four months old, excepting those for slaughter, brought into California from other states will have to bear evidence of calf vaccination.

The California Department of Agriculture will recognize the official mark of brucellosis calf vaccination adopted by the states from which the calves are exported to California. Officials of the Division of Animal Industry said that most states use ear tattoo or ear tag or both markings as the official indication of calfhood vaccination.

Dr. J. E. Stuart, Chief of the Division, said that the United States Department of Agriculture brucellosis control regulations permit unvaccinated negative dairy cattle to be brought into California. These unvaccinated animals, Dr. Stuart said, could become infected if exposed to the disease in California, and thus be the cause of perpetuating and spreading brucellosis at a time when the State and Federal Governments are trying to eradicate the disease.

The new regulation will bring the requirements for dairy cattle shipped into California in consistency with laws pertaining to cattle raised within the State. Since 1947, all California dairy cattle between 4 and 12 months of age have been required to be vaccinated against brucellosis. The calf vaccination program has been responsible for greatly reducing brucellosis in California.

## Livestock Diseases Reported

H. G. Wixom, D.V.M.

Tabulation of Diseases Reported to the State Bureau of Livestock Disease Control during the period May to August, inclusive, 1959.

	May-Aug. Incl. 1959		
	North	Central	South
Actinomycosis			
Anaplasmosis	13	14	3
Anthrax, Cattle	1	2	
	Sheep		
Blackleg			
Bluetongue	1	2	2
Bovine Bacillary Hemoglobinuria	1		
Coccidiosis, Cattle			
	Sheep		
Contagious Ecthyma, Sheep	1		
Cysticercus Bovine	4	13	84
Equine Encephalomyelitis			7
Equine Infectious Anemia			
Equine Virus Abortion			
Erysipelas, Sheep			
	Swine		
Foot Rot, Cattle			
	Sheep		
Hydroplasias, Lambs			
Hog Cholera	2	1	
Infectious Atrophic Rhinitis	1		
Johnes Disease, Cattle	6	1	
	Sheep		
Leptospirosis, Cattle	16	70	12
	Horses	1	9
	Sheep		1
	Swine	1	5
Listeriosis, Cattle			
	Sheep		1
Malignant Edema			
Malignant Catarrhal Fever			2
Mucosal Diseases			
Paratyphoid, Cattle	1	22	6
	Horses		
	Sheep		
	Swine	2	9
Psoroptic Scab, Cattle			
	Sheep		
Rabies, Bovine	6		
Rhinotracheitis		2	4
Sarcoptic Scab, Cattle			
	Swine		
Scrapie			
Sporadic Bovine Encephalomyelitis			
Transmissible Gastro Enteritis, Swine			
Vesicular Exanthema			
Virus Diarrhea, Cattle			
Vibrio fetus, Cattle	1	3	1
	Sheep		

## Laboratory Notes

From the Department of Clinical Pathology, School of Veterinary Medicine, University of California.

### The Capillary Hematocrit

A number of techniques are available to the veterinary clinician for the evaluation of the erythrocyte content of blood. The hematocrit reading, the erythrocyte count, and hemoglobin concentration are used for this purpose. Of these procedures, the hematocrit reading is generally the most accurate since it is less subject to errors inherent in the pipetting and diluting of blood. For the veterinary clinician who is interested in obtaining the greatest amount of usable information with the least expenditure of time, the hematocrit test offers the greatest possibilities. As a screening test, it is possible to determine the erythrocyte sedimentation rate, anemia or hemoconcentration, leukopenia or leukocytosis, icterus and also rough estimates of the erythrocyte count and hemoglobin concentrations. The hematocrit methods available are generally classed as the macro- and the micro- or capillary methods. The macro method using the Wintrrobe hematocrit tube has been previously discussed (see O. W. Schalm, *Calif. Vet.* Sept.-Oct., 1957, p. 27-28). The capillary method, although known for many years, has only in the past few years been widely used. It has a distinct advantage in very small animals since as little as 0.05 ml. of blood may be used.

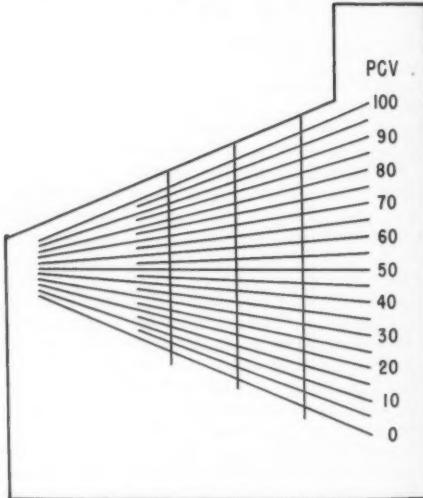
The blood sample may be either a sample to which a suitable anticoagulant (see O. W. Schalm and C. E. Cornelius, *Calif. Vet.*, Jan.-Feb., 1957, p. 43-44) has been added or obtained directly from skin puncture into capillary tubes containing heparin or oxalates.

At the present time, two variations of the capillary technique are used. The first technique employs capillary tubes, 75mm long x 1.2 to 1.5 mm diameter, a reader and a high speed centrifuge. The International Hemacrit Centrifuge is a suitable example of this type. The blood sample is taken directly from a skin puncture, i.e., ear of a cat, into heparinized capillary tubes up to a suitable height. After gently rocking the tube to insure mixing of the anticoagulant, one end of the tube is sealed by heating over a small flame. The tube is then centrifuged at 11,000 rpm for 5 minutes and the hematocrit read by means of a reader.

The second technique employs much smaller capillary tubes, 32mm x 0.8 mm, a mechanical reader and a high speed centrifuge. The Drummond Microhematocrit Centrifuge is a suitable example of this type. The blood sample is obtained and handled in the same manner as above but is centrifuged at 16,500 rpm for 2 minutes. The hematocrit percentage is also read by means of a reader. A distinct advantage in the saving of time by the use of either of these methods is obvious but in many instances, the initial investment in the special

equipment required may be a deterrent to their use. The advantages of using a small direct blood sample, especially from cats and small dogs, however, need not be lost. The larger capillary tubes, 75 mm x 1.0 mm, will in most instances provide the clinician with information usually obtained by use of the Wintrrobe hematocrit tube.

Capillary tubes 75 mm x 1.0 can be obtained in either plain or heparinized form. The blood sample is taken directly from a skin puncture onto the heparinized tube. The plain tube is used for a previously obtained blood sample to which a suitable anticoagulant has been added. The blood is taken up to a height of at least 2.5 cm (approx. 1 inch). The tube is then gently rocked so that the blood sample flows across the length of the tube several times to insure mixing of the anticoagulant. Finally, the blood sample is kept on one end of the tube and the empty end is sealed with a small flame so that a tiny bead of glass is formed. Alternately, the tube may be sealed using commercially available plastic clays.



Capillary Hematocrit Reader

The erythrocyte sedimentation test (ESR) which is applicable to dog and cat blood, is performed by placing the sealed tubes into a piece of clay in a vertical position. It can also be performed by placing on adhesive tape mounted on a wall surface (see C. E. Bild, *J.A.V.M.A.*, 129: 471, 1956). After one hour, the ESR can be read with the reader described below. A discussion of the ESR test has been previously published (see O. W. Schalm and V. Gilmore, *Calif. Vet.*, Jan.-Feb. 1958, p. 34-35).

After the ESR has been determined, the hematocrit test is performed. In the interest of economy of time, a second capillary tube may be used so that the ESR test and the hematocrit can be run simultaneously. A simple adapter to receive the capillary hematocrit tubes can be placed in the common 15 ml. centrifuge cups. A satisfactory adapter can be constructed with a short length of wooden doweling which fits snugly in the cups. Horizontal saw kerfs are cut along the length of the dowel approximately 70 mm long and deep enough to accommodate the diameter of the capillary tube. Alternately, metal carriers may be machined from aluminum rods. The capillary tubes are then centrifuged at a relative centrifugal force of about 2260 x g (3800 r.p.m. in the International Clinical Centrifuge) for 30 minutes. The packed cell volume is read by means of commercially available readers or the reader shown in the figure may be used. The bottom of the red cell column is aligned with the bottom line and the top of the plasma column is aligned with the top line. The hematocrit percentage may then be read from the right. A comparison between the PCV's obtained by the Wintrobe hematocrit tube and the capillary hematocrit tube using 31 samples of canine and feline blood gave a correlation coefficient of 0.996. This very high degree of correlation indicates that the results are comparable with that obtained by the Wintrobe hematocrit tube. From the PCV reading, a rough estimate of the hemoglobin concentration of canine blood may be obtained by dividing the PCV by 3. A rough estimate of the RBC count may be obtained by dividing the PCV by 6 (see O. W. Schalm, Calif. Vet., Sept.-Oct. 1957, p. 27-28). Buffy coat readings may also be obtained by this method. Leukocytosis would be indicated by the finding of Buffy coats greater than 2 per cent.

The capillary tube is also large enough that the icterus index (I.I.) may be determined. A series of capillary I.I. standards may be prepared by filling plain capillary tubes with standard solutions of potassium dichromate. These are made up and numbered according to the amount of dichromate in 10,000 parts of water, i.e., one unit is 1:10,000, 5 units is 5:10,000 etc. These tubes should be sealed on both ends. By comparing the color of the plasma layer with these standards, a measure of the I.I. may be obtained. The I.I. test provides a measure of the bilirubin content in plasma and is rapidly and easily performed. Absence of color in the plasma coupled with a low PCV would suggest a depression type of anemia. An elevated I.I. in the presence of a low PCV would suggest a hemolytic process while a high PCV would indicate possible liver disease.

Therefore, with a few small drops of blood obtained directly from the patient, valuable

## CVMA Committees

### Executive Committee

*Chairman*, Charles H. Ozanian, 10326 E. Artesia, Bellflower.

E. Braun, P. O. Box 21, Hanford.

Ernest H. Houchin, 40 West Santa Clara St., Ventura.

Ralph L. Collinson, 1550 McHenry Ave., Modesto.

W. W. Putney, 6536 Langdon, Van Nuys.

Irving M. Roberts, 9884 MacArthur Blvd., Oakland.

Richard L. Stowe, 2500 16th St., San Francisco.

### Program Committee

*Chairman*, Ralph L. Collinson, 1550 McHenry Ave., Modesto.

*Co-Chairman*, Midwinter Conference, Charles E. Cornelius, School of Veterinary Medicine, Davis.

June Meeting: Southern California Coordinator, J. Bradley Crundwell, 241 W. Olive Ave., Burbank. Northern California Coordinator, Clyde E. Brown, 1920 Knox St., Hayward.

Large Animal Committee: Chairman, Conrad J. Ferreira, Box 938, Redding; Arthur J. Eisenhower, P. O. Box 747, Merced; Robert S. Dickson, 323 Chester Ave., Bakersfield.

Small Animal Committee: Chairman, Ralph C. Vierheller, 907 W. Philadelphia St., Whittier; William M. Stansbury, 1432 10th St., Antioch; Warren G. Walker, 3502 Foothill Blvd., La Crescenta.

### Legislative Committee

*Chairman*, Robert W. Ormsbee, 2076 E. Fremont, Stockton.

William E. Steinmetz, 4227 Freeport Blvd., Sacramento.

M. C. McSpadden, 2372 W. Ramsey, Banning.

Max W. Harry, 2173 Fulton Ave., Sacramento.

John E. Craigie, 1016 Olympia, Seaside.

Fred B. Pulling, Jr., Box 608, Atascadero.

### Ways and Means Committee

*Chairman*, Willard D. Ommert, 5595 Gardendale Ave., Hollydale.

L. M. Proctor, 24 Meadow Lane, Concord.

Herbert I. Ott, 11554 E. Firestone Blvd., Norwalk.

Robert J. Schroeder, 9738 Tecum Rd., Downey.

G. L. Crenshaw, 1137 Eighth St., Orland.

Rufus R. Norton, Box 401, Riverbank.

### Ethics and Professional Conduct Committee

*Chairman*, E. R. Braun, P. O. Box 21, Hanford.

Charles H. Reid, P. O. Box 735, Hollywood.

Wendell L. Kanawyer, 5601 Mission St., San Francisco.

Lionel H. Brazil, 861 No. 99 Highway, Tulare.

### Public and Professional Relations Committee

*Chairman*, John B. Carricaburu, Box 155, Santa Ynez.

P. C. Enge, School of Veterinary Medicine, Davis.

Ernest H. Houchin, 40 West Santa Clara St., Ventura.

Max W. Colton, 331 W. Ohio, Escondido.

Robert E. Philbrick, 6695 Magnolia Ave., Riverside.

G. J. Freiermuth, 1280 Sunnyslope Rd., Hollister.

Ronald T. Haage, 3132 Auburn Blvd., Sacramento.

N. T. Freid, 298 Monterey Blvd., San Francisco.

Dave H. Wixom, Box 116, Morro Bay.

Kenneth Humphreys, Executive Secretary, CVMA, 3004 16th St., San Francisco.

### Membership and AVMA Affairs Committee

*Chairman*, W. W. Putney, 6536 Langdon, Van Nuys.

Secretaries of constituent associations.

### Finance Committee

*Chairman*, Loris O. Johnson, 413 Willow St., San Jose.

Thomas B. Condon, 10 Ivy Drive, Orinda.

Edward C. Bland, 25 Aquavista Way, San Francisco.

### Insurance Committee

*Chairman*, Richard B. Barsaleau, 2333 East Mineral King, Visalia.

Douglas W. Butchart, 4433 Highway 101 So., Eureka.

John D. Chudacoff, 7912 Sepulveda Blvd., Van Nuys.

Richard A. Stiern, 17 Nile St., Bakersfield.

information may be gained by the veterinary clinician. This information can be used as a guide for the selection of other hematological tests, for prognosis and for the evaluation of therapy.

J. J. KANEKO

## In Memoriam

1883—DR. GEORGE H. HART—1959

Dr. George H. Hart, V.M.D., M.D., LL.D., internationally known veterinarian and Dean, emeritus, of the University of California School of Veterinary Medicine, died August 2, in Woodland, California, at the age of 75.

Born in Philadelphia October 10, 1883, Hart graduated with the degree of V.M.D. from the University of Pennsylvania in 1903 and entered the government service immediately. From 1903 to 1908 he was assistant in bacteriology and pathology in the Bureau of Animal Industry, United States Department of Agriculture. During this time he enrolled as a student in the School of Medicine of George Washington University and was graduated Doctor of Medicine in 1908. Finding that his interest in the biological field was largely in research, he elected to devote his life to animals rather than to the practice of human medicine.

In 1912 he married Eva M. Cadman, who died in 1949. In 1954 he married Theresa A. Dennis, who survives him.

From 1908 to 1910 he was a field worker in the southwestern states, investigating principally the disease of Texas fever among cattle. From 1910 to 1917 he served as City Veterinarian in the Department of Health, City of Los Angeles. In 1917 he was appointed Assistant Professor of Veterinary Science, University of California at Berkeley. He was advanced to the rank of professor in 1924.

Dr. Hart came to Davis in 1926 as Pro-

fessor of Animal Husbandry and Chairman of the Department, a position he held until 1948, when he transferred from Animal Husbandry to become Dean of the newly created School of Veterinary Medicine. He retired in 1954.

George Hart was widely recognized as a dynamic and forceful leader and organizer and a relentless fighter for the right. It was in appreciation of these qualities and of the prestige he gave to the Institution that the University of California at Berkeley awarded him in 1958 the honorary degree of Doctor of Laws.

In 1938 the International Veterinary Congress awarded him its prize and in 1953 he was the recipient of the Borden Award of the American Veterinary Medical Association.

In 1947 Dr. Hart received one of the highest honors of the American Society of Animal Production. In recognition of his work for the livestock industry, his portrait was hung in the Saddle and Sirloin Club in Chicago. In 1955 he was Fulbright lecturer in the University of Sydney, Australia.

Dr. Hart was a member of the American Association for the Advancement of Science, American Association of University Professors, American Veterinary Medical Association, California Veterinary Medical Association, member and past president of the American Society of Animal Production, U. S. Livestock Sanitary Association, Wilderness Society, Society for Experimental Biology and Medicine and the Society of the Sigma Xi.



DR. GEORGE H. HART

## LOCAL ASSOCIATION NEWS

### Bay Counties VMA

The Bay Counties VMA will sponsor a symposium by Pfizer later this year, and a symposium by Eaton Laboratories next spring. Both will be held in San Francisco. Plans are being made for a combined Ladies Night and Installation of Officers on December 8. A black-tie affair, the meeting will be held in the East Bay. All Local Associations in the San Francisco area are invited. Note: Non-members of the BCVMA desiring to attend this gala celebration should notify the executive secretary, BCVMA, 3004 16th St., San Francisco, immediately.

\* \* \*

### Southern California VMA

Congratulations to the SCVMA on their enlarged "Pulse," their official bulletin, now an 8-pager. September meetings included: Annual quarterly meeting, SCVMA, September 16; San Gabriel Chapter, September 19; regular business meeting, September 21, and Council meeting, September 30.

\* \* \*

### Sacramento Valley VMA

The SVVMA met September 10 in Sacramento's Town House for dinner. Speaker was Dr. Ghery Pettit, from Davis. The Women's Auxiliary met September 16 at the Max Harry home and discussed plans for the fashion show to be held at the time of the Midwinter Conference.

\* \* \*

### Alameda-Contra Costa VMA

At the August 26th meeting of the Alameda-Contra Costa VMA, Program Chairman Dr. Max Powers introduced Dr. J. J. Kaneko from the University of California at Davis. Dr. Kaneko gave a very informative talk, illustrated with slides, on laboratory procedures pertaining to the study of blood.

On Sunday, September 27th, the social meeting was held at the Concord Inn, which was attended by veterinarians and their wives.

The association is planning to co-host the June, 1960, meeting of the CVMA in San Francisco. Dr. R. M. York will serve as chairman.

### Summer "Semester" at Veterinary Clinic

Dr. James W. Roberts (right) of the Berkeley Dog and Cat Hospital, 2126 Haste Street, Berkeley, is shown here with a University of California pre-veterinary student who is getting practical, on-the-job experience during the summer. The student, Jack D. Arnold of San Carlos, got the job through an arrangement between Roberts and the University's Farm Practice division at Davis. Arnold is shown here assisting Dr. Roberts while he examines a cat's injured foot.



### Merck Distributing "Sulfabrom" Booklet

Maintenance of therapeutic blood levels for at least 48 hours is possible today through the use of "Sulfabrom" in treatment of calf diphtheria, metritis, foot rot, pneumonia, and many other diseases of cattle. These previously used much of the veterinarian's valuable time, when it was necessary to frequently begin retreatment.

Details of this latest approach in sulfonamide treatment are contained in a new 20-page booklet, "The Use of Sulfabrom (Sulfa-bromomethazine) in Cattle," just published by Merck & Co., Inc., Chemical Division, Rahway, N. J. Distribution is under way to all veterinarians in the United States.

### Training and Problems of Veterinarians Aired on KRE

Executive Secretary Kenneth Humphreys was the guest of Earl Akin of the Berkeley-East Bay Humane Society on August 20 on the latter's radio program, "The Wayfarer," over Berkeley's KRE radio station.

Humphreys reviewed the training and problems of veterinarians on Akin's popular program which is directed to pet owners in the San Francisco Bay Area. In better acquaint-

ing the public with the veterinarian, Humphreys stressed the early training by students hoping to enter the profession, as well as the courses offered at the post-graduate level.

The doctor of veterinary medicine, Humphreys said, must "keep up" with new developments just as doctors of human medicine. In this way the veterinarian solves many new problems before they become real problems.

## Aspects of Immunology

(Continued from page 21)

is denied access. On this basis, a modified virus can be employed to thus influence the metabolism of the cell so that the growth of a second, virulent virus cannot be supported.

Thus it would appear that, in addition to or exclusive of the ability to neutralize or destroy the virus extracellularly, an effective antiviral substance should readily penetrate the parasitized host cell and prevent multiplication of the virus without further injury to the cell.<sup>2</sup>

### The Antibody-Forming Apparatus

Antibody is produced in the animal body in response to the presence of antigen by cells of the lymphoid-macrophage system which are normally concerned in the production of globulin.<sup>1</sup> Evidence points to the plasma cell and its near relatives, and with much less certainty to cells of the lymphocyte type, as sources of antibody.

Very large doses of antigen given to adult animals may overwhelm the antibody-forming apparatus, resulting in immunological paralysis and failure to produce antibodies.<sup>1</sup>

### Agammaglobulinemia

A fairly recently discovered disease, the study of which has done much to shed new light on immunity, goes by the jawbreaking name of agammaglobulinemia.<sup>4</sup>

Patients afflicted with this condition are prone to recurring infections. They lack the normal ability to produce antibodies in response to antigenic stimulus. In the normal individual antibody proteins are found in the gamma globulin fraction of the serum proteins (in recent electrophoretic assays,<sup>6</sup> it has been disclosed that in hyperimmunized dogs, antibody proteins are found in both the gamma and beta fractions of the serum proteins; how this finding may fit into the picture of AG is open to conjecture). AG patients probably lack antibodies of any kind because, as shown by electrophoretic studies, the gamma globulin fraction is missing. The principal reason the disease has only recently come to light (1951) is because, prior to the advent of the antibiotics, patients could not be kept alive long enough for diagnostic detection and study.

### References

<sup>1</sup>Topley and Wilson: "Principles of Bacteriology and Immunity," Vol. II, 4th ed., Williams and Wilkins, Baltimore (1955).

<sup>2</sup>Rhodes and Van Rooyen: "Textbook of Virology," 2nd ed., Williams and Wilkins, Baltimore (1953).

<sup>3</sup>William Arthur Hagan: "The Infectious Diseases of Domestic Animals," Comstock Publishing Co., Ithaca (1944).

<sup>4</sup>Gitlin, David, and Janeway, Charles A.: "Agammaglobulinemia," *Scientific American*, 196, 93-104; (July) 1957.

<sup>5</sup>Baker, James A., and Gillespie, James H.: "Viral Diseases," *Veterinary Excerpts*, 19, 15-29; 1959.

<sup>6</sup>Burch, George R., Mayer, Karl, and Brinkman, David C.: "Therapeutic Use of Canine Antibodies," *The Allied Veterinarian*, 30, 68-71, 88-90; (May-June) 1959.

## CALIFORNIA VETERINARY MEDICAL ASSN.

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### Veterinarian's Malpractice Liability

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Executive Secretary  
CVMA  
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## Pfizer Symposiums Set

The Pfizer Laboratories will hold two symposiums on dermatology with Dr. Frank Kral as speaker. The first will be held on Sunday and Monday, November 1 and 2, in the Ambassador Hotel, Los Angeles, and the second on Sunday and Monday, November 8 and 9 in the Sheraton-Palace Hotel, San Francisco.

Dr. Kral has been professor of veterinary medicine and professor of the graduate medical school of the University of Pennsylvania since 1949.

He has published two text books: "Colic in Horses" and "Dermatology," and has written more than 150 technical veterinary papers. Dr. Kral's most recent appearance on the Pacific Coast was at the CVMA annual meeting in San Jose, in 1958.

Veterinarians in each area are cordially invited by Pfizer Laboratories to attend these meetings. Registration starts at 8 a.m. each day, with the program beginning at 9 a.m.

The San Francisco symposium is being sponsored by the Bay Counties Veterinary Medical Association.



FRANK KRAL

## OPPORTUNITIES

### For Lease

Small animal hospital for lease in central California. Good location; one-man operation. Partially equipped; kennels and runs. Arrangements can be made for leasing on a rental or percentage basis. Box A-84, THE CALIFORNIA VETERINARIAN.

\* \* \*

### Veterinarian Wanted

California state veterinary positions. Excellent opportunities in California State Government in either disease control and pathology or meat hygiene for graduate veterinarians with or without experience in practice. Salary range \$556-\$676. Senior veterinary students eligible to apply before graduation. Liberal employee benefits. Write at once for further information. California State Personnel Board, 801 Capitol Ave., Sacramento 14, California.

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Experienced veterinarian wanted by firm with large dairy herd. Permanent position. Salary open. Write qualifications to Box A-86, THE CALIFORNIA VETERINARIAN.

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### Position Wanted

Northern California assistantship in equine, small animal or mixed practice, leading to partnership. Married, age 30, veteran, California license. Box A-85, THE CALIFORNIA VETERINARIAN.

## Applicants

John W. Holden, Jr., Sonoma. Vouchers: Dario H. Marioni, Robert P. Gobler.

Donald W. Jolly, Santa Barbara. Vouchers: Robert J. Schroeder, Charles H. Reid.

Robert L. Maahs, Pasadena. Vouchers: Robert S. Stansbury, Myron Thom.

M. A. Northrup, San Francisco. Vouchers: George M. Simmons, David M. Strohauer.

Irving Singman, San Gabriel. Vouchers: Lawrence Minsky, L. G. Atkinson.

Edward B. York, Burbank. Vouchers: N. L. McBride, K. R. Madill.

## Volatile Anesthetics

(Continued from page 16)

tile anesthetic from the tissues of the newly-delivered puppy. The anesthetic concentration used for the bitch during delivery has averaged 1.5%.

In a preliminary report on the use of Halothane on more than 2000 patients, Ausherman et al. state they were impressed with the rapid, smooth induction, the ease of maintenance with good anesthetic equipment, the reduction of salivation, the reversibility of the agents' action by controlling the vapor concentration, the rapid recovery time without excitement and the minimal complications.

One of the possible complications with chloroform, cyclopropane and Halothane anesthesia is the occasional necessity of use of a cardiac stimulant to correct bradycardia or hypotension. Hall, 1958, discussed the possibility of volatile anesthetics of sensitizing the heart to epinephrine. There were no fatal arrhythmias in seven dogs given intramuscular epinephrine. It required 159 times the intravenous dose of epinephrine to produce the same results intramuscularly. It is suggested the veterinarian make any injections of epinephrine intramuscularly in dogs if such an agent is deemed necessary.

## Massengill Introduces Hemostop

Hemostop, a new systemic hemostat developed by the Veterinary Division of the S. E. Massengill Company, controls bleeding by decreasing excessive capillary permeability and promoting the retraction of severed capillary ends.

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Hemostop is also effective therapy in treating epistaxis in race horses and capillary bleeding from other causes. Continued and prolonged use of Hemostop has caused no undesirable side effects. At recommended dosage levels there are no known contraindications.

## CVMA Finance Committee Meets

The Finance Committee of the CVMA met with the Executive Secretary in his office Thursday evening, September 24th, and reviewed the first quarter's budget and expenses of the association. The report was found to be satisfactory.

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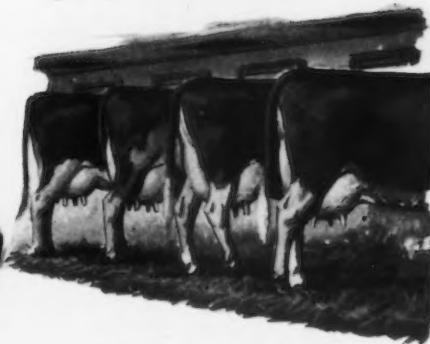
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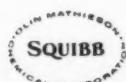
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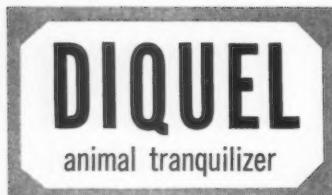
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\*Figures based on a study made by the Veterinary Services Committee of the American Veterinary Medical Association.

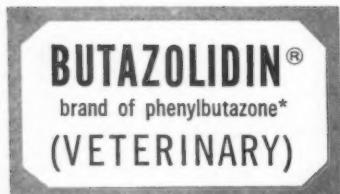
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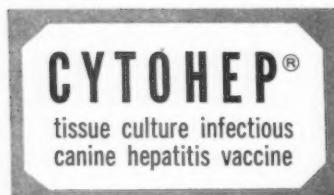


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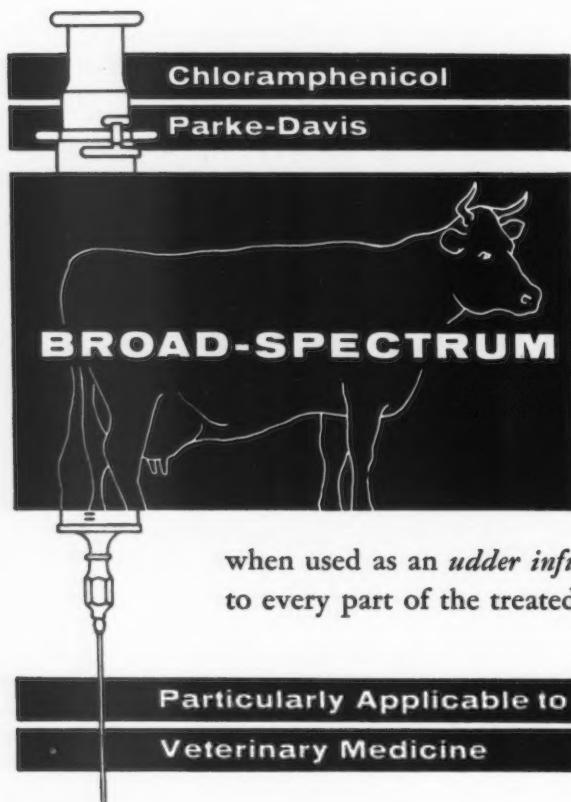


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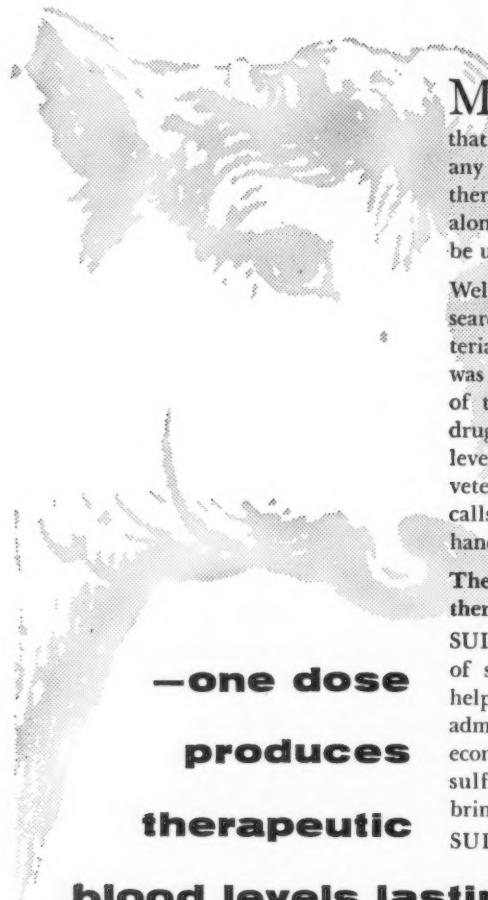
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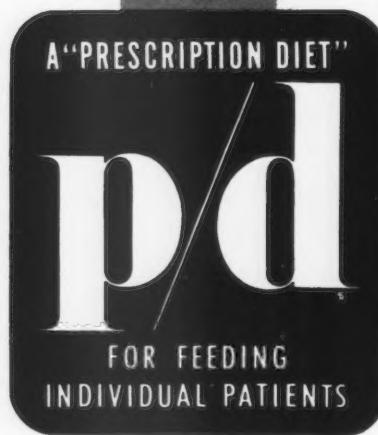
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So he ordered PANPLEX CAPSULES which he used with great success in numerous cases (see below) and he lived happily ever after.

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PANPLEX CAPSULES are recommended in the treatment of the following conditions:

*Dogs:* respiratory—bronchitis, pharyngitis, pneumonia, tonsillitis, tracheobronchitis, and other upper respiratory infections; urinary—cystitis and nephritis; dermal—dermatoses and wounds; miscellaneous—osteomyelitis, bacterial complications of viral infections, and pre- and postoperative prophylaxis; gastrointestinal—bacterial diarrhea, enteritis, and gastroenteritis.

*Cats:* pneumonia, enteritis, abscesses, infected wounds, bacterial complications of viral diseases, and for pre- and postoperative prophylaxis.

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